



# Public Health Laboratory Service

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THE PUBLIC HEALTH LABORATORY SERVICE  
BOARD

During 1964 the Board sustained a sad loss by reason of the death in May of Dr. E. Hughes, Medical Officer of Health for Reading, who had been a member since the institution of the present Board on 1st August, 1961.

Dr. Hughes is succeeded by Dr. J. F. Warin, Medical Officer of Health for the City of Oxford.

The present membership of the Board is set out on page iii.

# THE PUBLIC HEALTH LABORATORY SERVICE BOARD

(1965)

*Chairman:* E. T. C. Spooner, M.D., M.R.C.S.

(Dean, London School of Hygiene and Tropical Medicine,  
London, W.C.1)

*Members:* P. Alwyn-Smith, M.B., B.S., M.R.C.S.

(Senior Administrative Medical Officer, Welsh Hospital Board)

A. H. Clough, C.M.G., O.B.E.

(late Under Secretary, H.M. Treasury)

Professor A. C. Cunliffe, M.D., F.C.Path., M.R.C.S.

(Professor of Bacteriology, University of London, at King's  
College Hospital Medical School, London, S.E.5)

Professor A. W. Downie, M.D., D.Sc., F.C.Path., F.R.S.

(Professor of Bacteriology, University of Liverpool)

J. Stevenson Logan, M.B., Ch.B., D.P.H.

(Medical Officer of Health, Southend-on-Sea, Essex)

J. R. McGregor, C.B., C.B.E., M.C.

(late Director of Finance, War Office)

Charles C. Stevens, LL.B.

(Member of Manchester Regional Hospital Board; Chairman,  
Macclesfield and District Hospital Management Committee)

Professor C. H. Stuart-Harris, C.B.E., M.D., F.R.C.P.

(Professor of Medicine, University of Sheffield)

D. Thomson, C.B., Q.H.P., D.M., D.P.H.

(Deputy Chief Medical Officer, Ministry of Health)

J. F. Warin, M.D., D.P.H.

(Medical Officer of Health, Oxford)

G. I. Watson, M.D., M.R.C.S., D.T.M. & H.

(Medical Practitioner, Peaslake, Surrey)

Professor R. E. O. Williams, M.D., F.C.Path., M.R.C.P.

(Professor of Bacteriology, University of London, at the  
Wright-Fleming Institute, St. Mary's Hospital, London, W.2)

*Staff Assessors to the Board:*

B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H.

*Secretary:*

D. V. T. Fairrie, B.A., F.C.A.







## INTRODUCTION

### ADMINISTRATION AND ORGANISATION OF THE SERVICE

The Public Health Laboratory Service is the successor of the Emergency Public Health Laboratory Service planned, organised and administered during the war years 1939–1945 by the Medical Research Council, at the request of H.M. Government. In 1945 it was decided by the Government to retain the Service on a permanent footing. Statutory authority was provided by Section 17 of the National Health Service Act, 1946, which empowered the Minister of Health to provide a “bacteriological service” for the control of the spread of infectious diseases. Later the Medical Research Council agreed to an extension of the period of their administration, with the delegation of detailed responsibility to the Public Health Laboratory Service Board appointed by them for this purpose. In 1960, however, the Public Health Laboratory Service Act, 1960, established and incorporated a new Public Health Laboratory Service Board as a statutory body capable of acting in its own right as agent for the Minister. The Act also provided for the transfer of staff of the Service from the employment of the Council to that of the Board, and the transfer of property from the Council to the Minister of Health; these transfers took effect on 1st August, 1961.

The Chairman and members of the Public Health Laboratory Service Board are appointed by the Minister of Health and, in accordance with the Schedule to the Act, the members must include the following (and must therefore be at least eight in number, in addition to the Chairman):

- (a) not less than two persons appointed after consultation with the Medical Research Council;
- (b) not less than two persons with experience as bacteriologists, appointed after consultation with such organisations as the Minister thinks appropriate;
- (c) not less than two persons holding office as medical officer of health to a local authority;
- (d) not less than one person appointed after consultation with such organisations as appear to the Minister to represent the hospital service;
- (e) not less than one fully registered medical practitioner engaged in general medical practice, appointed after consultation with such organisations as the Minister may recognise as representative of practitioners so engaged.

The Chairman and members of the Board are normally appointed for a term of three years.

The Board exercises its functions in accordance with any directions received from the Minister of Health. In the exercise of these functions it acts as a principal.

The staff of the laboratories of the Service are appointed and employed by the Board. The scientific staff are selected almost entirely from newly qualified medical graduates after they have held house appointments for 6 to 12 months;



they then receive 5 years' training in pathology and bacteriology. During the third year the trainee is required to obtain the Diploma in Bacteriology of the University of London or the University of Manchester. As a general rule, science graduates without medical qualifications are employed only in the reference laboratories, where the work is of a highly specialised nature. The technical staff is recruited from boys and girls leaving school at 16 to 17 years of age, who have reached the necessary standard of education; they go through a 5-year apprentice system of training.

The development of the Service between 1948—in which year it was established in its present form—and 1964 may be summarised as follows:

			1948	1953	1958	1964
Number of	Constituent					
Laboratories	.. ..		36	51	58	60
Medical staff	.. ..	}	84	110	120	136
Scientific staff	.. ..			30	29	38
Technical Staff	.. ..	}	562	441	507	530
Clerical and Maintenance Staff	.. ..			303	376	412
Total specimens examined	..		793,314	1,394,318	1,943,045	2,720,886

At first the material received at the laboratories consisted of sanitary specimens—milks, water, foodstuffs, etc.—and specimens of human and animal origin sent in for bacteriological examination. In 1956, however, after a field trial of the Salk poliomyelitis vaccine carried out with the help of the laboratories of the Service under the aegis of the Medical Research Council, attention was increasingly directed to the examination of specimens for virus infection. By 1958 the majority of the laboratories were able to offer the virus diagnostic service which is now general. In 1964 67,859 virus specimens were examined.

In the early post-war years most of the constituent laboratories were housed in temporary accommodation provided by County Councils, County Borough Councils, University departments and hospitals; a few were in huts or converted houses. However, a programme was soon established for the provision of permanent buildings, designed for their purpose, and sited conveniently for the areas served. It was decided by the Ministry of Health in 1946 that, whenever possible, public health laboratories should in future be situated in hospital compounds, as the need for the integration in the Service of public health and hospital bacteriology became generally recognised. After the Regional Hospital Boards had come into operation, this led to the establishment of joint public health and hospital laboratories. At the present time nearly all major projects for new buildings are of this nature, and the building programme is linked to that of the Ministry of Health for new hospitals.

The Central Laboratory of the Service is situated at Colindale, London, N.W.9, and contains not only a routine Public Health Laboratory serving the adjacent area of Middlesex, but also a number of reference laboratories and specialist departments. There are three small sub-laboratories at Coppett's Wood, Edmonton and Neasden receiving routine public health work from their areas.



There is a separate laboratory at County Hall, London, S.E.1, serving the County of London.

For the remainder of England and Wales there are 58 constituent laboratories and 5 "recognised" ones. These latter are hospital pathological laboratories which undertake the examination of sanitary specimens for the Service in areas where the facilities of a constituent laboratory are not available, or are available only at a long distance with considerable inconvenience.

The total of 60 constituent laboratories includes the following 9 regional ones: Bristol, Cambridge, Cardiff, Leeds, Liverpool, Manchester, Newcastle upon Tyne, Oxford and Sheffield. These regional laboratories, most of which are staffed by three to five medically qualified workers, together with junior bacteriologists in course of training, act to some extent as parent laboratories to a group of area laboratories. Help is provided in the handling of special—e.g. epidemiological—enquiries, and in the provision of staff substitutes during periods of leave or illness.

#### SCOPE OF THE SERVICE

The routine work of the Service is essentially bacteriological, virological and epidemiological. Apart from certain tests closely associated with bacteriological and virological investigations, chemical and biochemical tests and histological examinations are not performed. Except by special arrangement the Service does not undertake work that is rightly within the province of the hospital or clinical pathologist, but it is ready to offer help when facilities for such work are not otherwise available.

All specimens must be submitted by doctors, veterinarians, dentists, public health inspectors, and others acting on behalf of medical officers of health, Government departments, or representatives of other official bodies; specimens cannot be accepted from private persons (see, however, sub-paragraph (b) below).

The routine specimens fall under two main heads:

- (a) "Medical" specimens received from medical practitioners, infectious diseases hospitals and local authorities. These are specimens of sputum, faeces, throat swabs, blood samples, etc., taken for diagnostic examination from persons suspected of suffering from infectious disease. General practitioners, medical officers of health, school medical officers and others are offered a comprehensive service for the diagnosis, treatment and prevention of bacterial, virological and mycological infections. Medical practitioners are welcomed at all times in the laboratories for the purpose of consultation.
- (b) "Sanitary" specimens: these are received from medical officers of health, public health inspectors, and others concerned officially with the control of the public health. They comprise specimens for bacteriological examination of water, shell-fish, watercress, sewage, milk and cream; of processed foods such as ice-cream, artificial cream and canned foods; and of imported products such as the various forms of meat, fish, processed egg, coconut and fertiliser. The Service normally examines only material offered to the consumer, but will, of course, examine specimens taken at any stage of production or distribution by medical officers of health investigating suspected food-borne infections. The Service is ready to give free advice to food manufacturers and



processors to assist them in the production and distribution of bacteriologically safe products. For routine control of such products, commercial firms are charged a fee, but work of this sort is undertaken only exceptionally.

Brief mention has already been made of the reference laboratories and specialist departments. These provide facilities for the exact identification and "finger-printing" of organisms belonging to many different groups. This is sometimes required by clinicians in their treatment of patients, but more often for epidemiological purposes. The reference laboratories are open freely for use by any laboratory within or without the Service. In addition, a number of reference experts are retained for the examination of occasional specimens which require special skill, special knowledge, or special reagents.

The epidemiological work of the Service includes not only the investigation of outbreaks of infectious disease, in co-operation with local medical officers of health, but also a study of the distribution and behaviour of infectious agents throughout England and Wales. Epidemiological information is collected centrally week by week from public health and hospital laboratories all over the country, including Northern Ireland and parts of Scotland, and then made available to each of these laboratories in return in the form of a confidential weekly summary.

Field investigations of infectious disease, and field trials of protective agents, including vaccines, are frequently carried out. All laboratories are engaged to some extent in research in addition to routine work.

A special feature of the Service is the investigation of various problems by Working Parties containing a dozen or more members drawn from laboratories in different parts of the country. Some of the problems investigated are of direct concern to Government Departments, with which close working relations have always existed.

In addition to normal public health work, an increasing number of laboratories of the Service are undertaking responsibility for clinical bacteriology at hospitals. Arrangements of this kind, involving the association of a public health laboratory with the pathological laboratory of a hospital, provide many advantages, and are frequently requested by hospital authorities. They are readily accepted on condition that there is also a need for public health laboratory facilities in the area.

General information about the current work of the Service, together with contributions from other workers in related fields, is published in the joint "Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service" which is issued, free of charge, to all medical officers and bacteriologists concerned with epidemiology and public health. The section of this publication which is concerned with the activities of the Service is edited by Dr. J. C. Kelsey of the Central Public Health Laboratory, Colindale Avenue, London, N.W.9. For those who do not receive a free copy, the Monthly Bulletin may be purchased at 1s. 6d. a copy through the Ministry of Health.

The Service distributes various vaccines and sera on behalf of the Ministry of Health. It also provides certain reagents for diagnostic purposes, prepared by or issued from the Standards Laboratory for Serological Reagents at the Central Public Health Laboratory, Colindale Avenue, London, N.W.9 (*see p. 23*).



GRANTS AND OTHER ASSISTANCE RECEIVED FOR SPECIAL  
INVESTIGATIONS

In 1964 the Public Health Laboratory Service Board received the following grants to enable special investigations to be undertaken, and major equipment of a special nature to be obtained.

(a) From the World Health Organisation:

\$3,500 for the assistance of laboratory research on Enteric Phage-typing at the International Centre recognised at the Enteric Reference Laboratory, Colindale, London.

\$3,500 for the International Shigella Centre recognised at the Dysentery Reference Laboratory, Colindale, London.

\$3,000 for the International Reference Centre for Staphylococcal Phage-typing recognised at the Cross-Infection Reference Laboratory, Colindale, London.

\$2,500 towards the cost of testing the specificity of virus antisera at the Standards Laboratory for Serological Reagents, Colindale, London.

\$2,500 for the preparation and testing of reagents (rhinovirus), at the Virus Reference Laboratory, Colindale, London.

(b) From the Medical Research Council:

A grant of £11,698 a year for two years for a second survey into the pattern of infection in acute respiratory virus diseases, £3,370 a year being for a study in collaboration with general practitioners and £8,328 a year for a study in association with the Council of children in hospital.

Grants have been received by the following individual members of the Board's staff:

(a) From the Medical Research Council:

Dr. E. S. Anderson (Director, Enteric Reference Laboratory, Colindale, London).

Further provision for expenses, and also for scientific and technical assistance, required for a study of the constitution of the cell in *Salmonella paratyphi B* and related organisms.

Dr. L. Hoyle (Director, Public Health Laboratory, Northampton).

Further provision for the expenses of an investigation of the physical and chemical structure of influenza virus.

Dr. J. C. McDonald (Director, Epidemiological Research Laboratory, Colindale, London—succeeded by Dr. T. M. Pollock on 1st July, 1964).

Further provision for an investigation to evaluate gamma globulin in prevention of congenital malformations due to rubella and undefined infections in early pregnancy.



In addition to the provision of research grants described above, two research projects are in progress jointly with the Medical Research Council, in which members of the Council's scientific staff are collaborating. These are as follows:

Research work on viruses at the Epidemiological Research Unit, Cirencester, Gloucestershire;

Various studies at the Cross-Infection Reference Laboratory, Colindale Avenue, London, N.W.9.

Laboratory Directors of the Service are also carrying out investigations in conjunction with general practitioners and hospital medical officers in many places, notably in the study of chronic bronchitis, of hospital cross-infection, and of sterilisation and disinfection problems; on gastro-enteritis and the safety of various foods.



## REVIEW BY THE DIRECTOR OF THE SERVICE OF ACTIVITIES IN 1964

### LABORATORIES

Two new laboratories were opened during 1964. (1) A joint hospital and public health laboratory at Gloucester, under the directorship of Dr. A. E. Wright. For many years the Department of Pathology at the Gloucestershire Royal Hospital maintained a close relationship with the P.H.L.S., during latter years as a "recognised" laboratory of the Service. The establishment now of a constituent laboratory follows the retirement in August, 1964 of Dr. E. N. Davey the hospital pathologist. Additional accommodation should become ready for use during 1965. (2) A Leptospirosis Reference Laboratory was set up, with accommodation at the London School of Hygiene and Tropical Medicine, under Dr. L. H. Turner. A few years ago Dr. Turner succeeded the late Dr. J. C. Broom as Reference Expert of the Service on leptospiral infections. The establishment of a full reference laboratory reflects the growing interest in these infections.

As foreshadowed in last year's Report, Dr. G. I. Barrow took up his new post as Director of the Public Health Laboratory at Truro in August 1964; the extension of the joint hospital and public health laboratory at Oxford was completed; and the laboratory at Manchester, for so long housed under cramped and inconvenient conditions, was at last moved to the new building it is to share with the hospital and the Central Serological Laboratory at Withington Hospital.

In addition, the old laboratory at West Hill House, Epsom, was finally abandoned on completion of the conversion of existing premises at West Park Hospital; and other extensions were completed at Coventry, Preston (new animal house), Truro and Watford.

Major schemes for the future already in progress include new buildings for laboratories at Birmingham, Bristol, Cardiff, Exeter, Hull, Liverpool, Peterborough and Poole (to replace the present laboratory at Bournemouth); except for Bristol, Exeter and Hull, all will be joint hospital and public health laboratories.

Dr. N. S. Mair at Leicester was appointed Reference Expert for *Pasteurella pseudotuberculosis*, and Dr. B. E. Andrews (in 1963) Reference Expert for *Mycoplasma* infections.

Arrangements were made to relieve the Standards Laboratory for Serological Reagents of the routine preparation and distribution of some bacterial diagnostic reagents; many of them are now being made by Burroughs Wellcome Limited. It is hoped in due course to make similar arrangements for virus diagnostic reagents.

The first steps were taken towards closer collaboration with bacteriologists in Scotland: Professor Robert Cruickshank was invited to attend, as observer, the five-times-yearly meetings of the Staff Committee; and Dr. Donald M. Weir



of Edinburgh became a member of the Working Party on Farmer's Lung. Dr. Elias-Jones of Glasgow took part in a small *ad hoc* survey of "fines" manufactured in this country from desert-dried bone for the presence of anthrax bacilli.

#### STAFF

##### *Obituary.*

The sudden deaths of two members of the staff are recorded with deep regret: Dr. K. J. Steel, Deputy Curator of the National Collection of Type Cultures, on 25th September, aged 34 years; and Mr. J. L. Durrant, Senior Technician at the Ipswich laboratory, on 15th March, aged 33 years: also are recorded the deaths of two former members of the staff: Dr. P. H. Martin, who died on 17th November, 1963; he had been a member of the Service from its inception in September, 1939 until his retirement, through ill health, in December 1958: and Dr. J. H. C. Walker, who died unexpectedly on 30th January, 1964; he had joined the P.H.L.S. after leaving the Army in 1948, and retired in July, 1960.

##### *Retirements and resignations.*

Sir Graham Wilson, after completing a year's part-time service, left on 1st October to enter on new teaching activities at the London School of Hygiene and Tropical Medicine. On 23rd September, at a reception at the Royal Society of Medicine presided over by Sir Landsborough Thomson, he was presented with his portrait, painted by Mr. Merlyn Evans. Some 250 of the many friends and colleagues who had subscribed for it were there to pay tribute to him.

Dr. K. E. A. Hughes retired from his post as Director of the Portsmouth laboratory on 24th February.

Dr. R. Norton, Consultant Bacteriologist and second-in-command at the regional laboratory at Newcastle since the P.H.L.S. became responsible for it, and formerly bacteriologist at the old Walker Gate laboratory and later the City Bacteriological Laboratory, Newcastle, since 1937, retired in March. We have been most grateful to him, since then, as also to Dr. Douglas Riding, for valuable help with locum duty during the year.

Dr. J. C. McDonald, Director of the Epidemiological Research Laboratory since January 1961, resigned on 30th June, 1964 to become Professor of Epidemiology and Chairman of the Department of Epidemiology and Health at McGill University, Montreal. Dr. T. M. Pollock, from the Medical Research Department of the Wellcome Foundation, was appointed to succeed him. Dr. R. A. Peters, a junior member of the Epidemiological Research Laboratory, left at the same time, also to take a post in Canada. Other members of the medical staff to leave included Dr. A. S. Beare, to take a post with a commercial firm; Dr. D. E. Mahabir for domestic reasons and Dr. H. Bevan-Jones.

##### *Honours*

Mr. J. D. Atkinson, Senior Technical Officer at the Central Public Health Laboratory, Colindale, was awarded the M.B.E. in the New Year's Honours List for 1964.



### *Appointments*

Dr. S. T. Cowan was appointed Deputy Director of the Service, with the particular duty of the supervision of arrangements for visiting scientists. Dr. J. C. Kelsey took over from Sir Graham Wilson the editorship of the *Monthly Bulletin*; Dr. Kelsey's services will, in future, be used increasingly on matters connected with information and liaison within the Service, and between the Service, the Ministry of Health, and the Regions.

Dr. D. J. H. Payne succeeded Dr. K. E. A. Hughes as Director of the Portsmouth Laboratory in February 1964; he was himself succeeded at Northallerton by Dr. J. G. Wallace.

### *Secondments abroad*

At the request of the Government of Ethiopia, Dr. P. G. Mann was seconded for a period of two years to assist the development of laboratory services in Addis Ababa. Numerous requests for help of this sort continue to reach the P.H.L.S. from different parts of the Commonwealth and from foreign countries.

### VISITS AND VISITORS

A number of visits abroad were made by members of the staff during 1964. Among them, Sir Graham Wilson visited Ethiopia to advise the Ethiopian Government on re-organisation and development of laboratory services and the training of laboratory personnel, and Khartoum to advise about the organisation of a Medical Research Institute which it is proposed to establish there. Dr. J. B. Selkon visited Nairobi and Kampala at the request of the Medical Research Council to advise on research work in connection with tuberculosis chemotherapy trials; Dr. J. C. Kelsey visited Amsterdam at the request of the Medical Research Council to advise on sterilising techniques in relation to the production of specific pathogen-free animals at the Cancer Institute; Dr. L. Hoyle took part, at the invitation of U.N.E.S.C.O., in an international course for virologists at Bratislava, Czechoslovakia, Dr. J. O'H. Tobin attended a seminar in Paris on the epidemiology and prevention of measles and rubella. Dr. W. D. Brighton attended the IXth International Congress of Microbiological Standardisation at Lisbon; Dr. D. L. Miller the Xth European Symposium on Poliomyelitis and Allied Diseases in Warsaw; and Dr. J. E. Cradock-Watson, Dr. M. J. Lewis and Miss J. M. Hart the Symposium on Bacteriocines at Göttingen, Sweden.

An increasing number of postgraduate students from many parts of the world spent periods varying between a few days and eight months at Colindale, and at the laboratories at Bedford, Cambridge, Hull, Liverpool, Manchester, and Worcester, and at the Tuberculosis Reference Laboratory.

Short-term visitors included Dr. E. T. Bynoe, head of the Laboratory of Hygiene at Ottawa; and Dr. W. Charles Cockburn and Dr. M. R. Radovanovic from the World Health Organisation, Geneva.

A special Epidemiology Course for holders of W.H.O. Fellowships was held at Colindale in February and March, 1964.

### COMMITTEES

The Committee set up in December 1963 to consider the measurement of Laboratory work as an index of staff needs completed its task in March, and



has been disbanded. Its informal report—with recommendations not dissimilar to those of the Wright Committee for Scotland—was accepted by the Board and forwarded to the Ministry of Health for consideration.

During the year a Steering Committee on the Antibiotic Resistance of Pathogens was set up to initiate long-term investigations into the significance of changes in the resistance to antibiotics of organisms important to man and animals.

To meet the increasing attention now being paid to the disease known as farmer's lung, a working party was set up to establish the technique of serological tests to be used in areas where the disease is most likely to be met. We welcome to the membership of this Working Party Dr. Donald M. Weir, of the Department of Bacteriology of Edinburgh University.

The Committee on Problems Relating to the Testing and Evaluation of Disinfectants completed its work, and its report has now been published: *Brit. med. J.*, 1965, i, 408. Briefly, it is concluded that there are few genuine indications for the use by hospitals of liquid chemical disinfectants, and that even these few needs can be met by a small number of agents.

The Director of the Service accepted an invitation to serve on the Inter-departmental Committee of Inquiry into the Aberdeen Typhoid Outbreak of 1964.

A number of standing committees were also set up to give advice on various matters.

## SCIENTIFIC WORK

### *Infections Acquired in Medical Wards.*

The working party which investigated the incidence of septic infections among patients in medical wards presented its report in 1964. This work had been planned as a counterpart to an earlier survey of surgical wound infections (Public Health Laboratory Service 1960) but it proved to be more difficult to obtain a clear-cut picture of sepsis in medical wards than in surgical wards.

Nearly 7,000 admissions to 13 hospitals were studied and 5·7 clinical infections were recorded for each 100 admissions. Acquired infections were most common and most severe at the extremes of age. There was an excess of males over females in staphylococcal infections and in infections of the lower respiratory tract, and of females over males in urinary-tract infections. The incidence was above average in patients suffering from malignant disease, diabetes, rheumatoid arthritis, cerebral thrombosis and haemorrhage, and from diseases of the urinary tract and the skin.

Infections of the lower respiratory tract accounted for one-third of all the acquired infections, and for three-quarters of those thought to have contributed to death; but their clinical significance was often difficult to assess. It was not possible to obtain a reliable estimate of the part played by bacterial infection in "pneumonia" in old and moribund patients.

Local sepsis of the skin and of wounds was a relatively unimportant problem; primary skin infection due to *Staphylococcus aureus* were generally mild and sporadic, and the wound-sepsis rate (9·2 per 100 operations) was similar to



that found in surgical wards. There was a significant association between catheterization and urinary-tract infection in both sexes, but catheterization was relatively of greater importance as a cause of infection in males than in females.

There were 1·5 clinical infections with *S. aureus* for every 100 admissions. Large epidemics due to single staphylococcal strains were not common, and over half of all the lesions were due to strains which caused only one clinical infection in a ward in the course of a year. There was little correspondence between the rate of nasal colonization by a particular strain and the amount of sepsis it caused.

The results of the survey did not indicate that infection was rife and was spreading uncontrolled in medical wards; but they did show that a few patients contract infections and suffer consequences more severe than the conditions for which they entered hospital. They offered little hope that the spread of infection could be controlled by the selective isolation of a few patients in side-wards. Hospitals should be built in which as many patients as possible could be isolated from each other. In the meantime, the increased susceptibility of patients in certain age, sex, and disease categories suggested that there might be some advantage for them in protective isolation.

Public Health Laboratory Service, 1960 *Lancet*, ii, 659.

### *Staphylococcal Infection as a Cause of Death in Hospital*

Little information has been available till now on the frequency of death in hospital from staphylococcal cross-infection. A working party of the Service has just completed a careful study of some 600 unselected autopsies at a number of hospitals in different parts of the country over a period of one year from September 1961. At each autopsy, swabs for bacteriological examination were collected from various sites in the body with appropriate precautions against contamination. The collaborating pathologist and bacteriologist made their final assessment of the likely role of infection in causing or precipitating death in the light of all the clinical, pathological and bacteriological findings. The series included for comparison 125 autopsies on persons who had died outside hospital. About 10 per cent. of those dying in hospital were found at autopsy to have a staphylococcal condition thought to have accelerated death or been its main immediate cause. In two-thirds of this number the infecting organism had probably been acquired in hospital. In the great majority however, the staphylococcal disease, usually pneumonia, was a terminal event in persons who because of the nature of their underlying illness would not in any event have been expected to survive. Of the 9 hospital staphylococcal deaths judged preventable, 5 were due to staphylococcal enterocolitis and 2 to post-operative wound infection. Many hospital patients whose deaths were not ascribed to infection were found nevertheless to have large numbers of staphylococci in their lungs at autopsy, and further work will be needed to explain this finding.

### *A New Anti-typhoid Vaccine*

All the current T.A.B. vaccines are prepared with motile organisms and stimulate the production of H agglutinins in inoculated subjects. The H agglutination test is important in the diagnosis of enteric fever, but its value is greatly diminished or lost altogether if post-inoculation H antibodies are present. A new antityphoid vaccine is under development in the Enteric Reference



Laboratory (Anderson and Gunnell 1964). It is based on the use of a non-motile variant of the classical vaccine strain of *Salmonella typhi*, Ty2. The non-motile mutant (TNMI) has the same O and Vi agglutinability as the parent Ty2. Immunization tests in rabbits show that it stimulates the production of O and Vi agglutinins in good titres, but no H agglutinin is produced. Assuming that it is as protective against typhoid fever as is Ty2, the use of the non-motile strain offers the advantage that it will not stimulate the production of H agglutinin after inoculation. This eliminates the difficulty in the diagnosis of typhoid fever in inoculated patients due to the presence of post-inoculation H agglutinin.

The same principle, that is the use of non-motile mutants, could be followed in the preparation of the paratyphoid A and B components of T.A.B. vaccine.

A rare flagellar antigen will probably be incorporated in the new vaccine. The H agglutinin resulting from the use of this antigen will form a useful independent marker to indicate that a patient under investigation has been inoculated with the new vaccine.

Anderson, E. S. and Gunnell, Anne, 1964. *Lancet*, ii, 1196.

### *Salmonella Infection in Cattle*

A Working Party of the Veterinary Laboratory Services and the Public Health Laboratory Service has studied salmonellosis in cattle in England and Wales. The role of infected animal food and the importance of cattle as a source of salmonellae in man were also observed.

The incidence of cattle salmonellosis was investigated by Veterinary Investigation Centres. The range of serotypes isolated from cattle was noted covering the period 1956–1961. The commonest serotypes were *S. dublin* and *S. typhimurium*. The frequency of both serotypes was highest in the last quarter of the year—the period of maximum calvings. In previous investigations in Britain, *S. dublin* and *S. typhimurium* were seldom isolated from the raw materials of animal feeding stuffs and complete animal foods. The distribution of phage-types of *S. typhimurium* in cattle was compared with that in man and animal feeding stuffs. Eight of the types found in cattle were common in human infections. Three of the types found in feeding stuffs were common in cattle and in man.

A study of ten incidents in cattle showed that the same salmonella serotype or phage-type was commonly found in man, in other farm animals and occasionally in feeding stuffs. Observations on calves, on arrival at a dealer's, indicated that salmonellosis was being spread into different regions by calf movement and the importance of travel conditions and holding time in abattoirs was noted in the promotion of cross-infection.

Correspondence in phage-types of *S. typhimurium* in human and bovine infection in an area was observed over 1958–1960. The results suggested that infection of man could originate from a bovine source and that foci of infection might persist in farm animals in the same area for some years.

This report is in course of publication.

### *Salmonella in Home-Killed Meat*

The results of a two-year study of the contamination of home-killed meat with salmonellae, and its significance as a source of human infection, were



reported by a Working Party (1964) under the chairmanship of Dr. H. G. M. Smith. More than 20,000 specimens from abattoirs, butchers' shops, and factories making meat products were examined at 18 laboratories. Efforts were concentrated on the slaughterhouses; the common occurrence of salmonellae in abattoir drains was confirmed, and the incidence was shown to be related in general to the proportion of cattle and pigs killed. Analyses of the results suggested that cattle introduce salmonellae into abattoirs more often than other species of animals. The most common serotype in abattoirs, as in human infections, was *Salmonella typhi-murium*; determination of the phage-type of strains of this organism greatly facilitated epidemiological studies. A general relationship was noted between the salmonella serotypes found in abattoir drains and those isolated from human infections that occurred in the towns served by the abattoirs. More specific evidence of a chain of infection from the slaughterhouse, through butchers' shops or markets, and sometimes to meat or meat products, was obtained on a number of occasions. The Working Party concluded that meat from pigs, cattle and calves, but not from sheep, is a source of salmonella infection in man and is responsible for both sporadic cases and outbreaks of disease. The findings will almost certainly stimulate further studies of this important aspect of salmonella epidemiology.

Public Health Laboratory Service, 1964. *J. Hyg. Camb.*, **62**, 283.

### *Influenza in Recent Years*

The inclusion of virology in the work of the Public Health Laboratory Service has enabled a close watch to be kept on the behaviour of influenza viruses.

During the early years of influenza epidemics due to the A<sub>2</sub> virus, numerous strains were isolated in the twelve laboratories experienced in egg inoculation techniques. Since then there has been a gradual increase in the number of laboratories providing a virus diagnostic service and tissue culture methods have largely replaced the use of eggs. Over the years the influenza A<sub>2</sub> viruses have therefore been isolated with increasing frequency in primary monkey kidney cell cultures, until in 1964 some 27 laboratories throughout the country were equipped to detect these viruses in the population. The sensitivity of this close coverage is such that even in years which have been regarded on other grounds as "non-influenza years", the virus has been found to be circulating and causing disease.

The laboratory confirmation of outbreaks of influenza in so many areas has provided accurate information on the incidence of the agent in the country. In addition, because all strains isolated have been examined in detail at the Virus Reference Laboratory, Colindale, it has been possible to follow the sequential antigenic changes which are known to have occurred with earlier influenza viruses and which have been shown now to be occurring with the A<sub>2</sub> virus.

From 1957 until 1961 all strains of influenza A<sub>2</sub> virus were antigenically similar. In 1961 a proportion of strains were found to show a small but detectable difference from the original A<sub>2</sub> virus. The few strains examined in 1962 all resembled the 1957 isolates. In 1963, when influenza outbreaks were more widespread, two-thirds of the viruses were still like the 1957 strains but others showed further changes in antigenic structure even to the 1961 strains. By



1964, with one exception, all strains isolated were different from the 1957 strains and although the variation from the 1963 strains was small the shift from the 1957 strains was clear-cut. At least 8-fold or greater differences could be detected by both haemagglutination and strain-specific complement fixation tests. This is probably a forewarning of a major antigenic shift in the next few years.

### *Complications of Measles*

A survey was undertaken by the Epidemiological Research Laboratory of the complications which occurred in 53,000 cases of measles notified during the first four months of 1963. The inquiry was made by post in 47 cities and with the collaboration of the Society of Medical Officers of Health.

The results (Miller 1964) showed that few children contracted measles in the first year of life. The commonest age of attack was five years, soon after school entry; 58 per cent. of the cases occurred before the age of five years. The frequency of serious complications of measles was greater than is generally supposed. About 6·5 per cent. of persons with measles (1 in 15) suffered from a potentially serious complication. If the rates found in this inquiry were generally true, in an average epidemic 35,000 patients would have serious complications and over 6,000 be admitted to hospital. Over 2,000 of the complications would be neurological, including some 600 cases of encephalitis, 20,000 would affect the respiratory tract, and 13,000 the middle ear. The incidence was highest in infants and adults. Electroencephalographic studies were made on 16 children reported to have had encephalitis or impaired consciousness within 6 months of having measles, and again 12 months later.

Most patients recover completely from measles and its complications, but occasionally serious permanent damage to the nervous system or respiratory tract may occur. A follow-up inquiry is being carried out to determine how often irreversible damage is done. Of the original cases further information is being sought on social conditions, state of health before and since having the measles, and treatment received, for all cases with neurological complications or pneumonia, 50 per cent. of cases with other respiratory complications or otitis media, all babies under the age of 6 months and 20 per cent. of babies from 6 to 11 months, together with a control group comprising 5 per cent. of the remaining patients without recorded serious complications. The results of this study are being analysed.

Miller, D. L., 1964. *Brit. med. J.*, ii, 75.

### *Sterilization and Disinfection*

In the last decade there has been a renewed interest in the methods used by hospitals for the sterilization of instruments, dressings and other equipment for surgical use, and for the disinfection of objects and surfaces, including the skin of patients and staff. In the last few years much painstaking and valuable work has been done by individuals and by groups: only now is this work bearing fruit. In 1964 reports were completed by two such groups, both closely connected with the Service. The first report is that of the Medical Research Council's Working Party on Pressure-Steam Sterilizers (1964). This report, the last of three, reviews the limitations and scope of steam sterilizers, and the types suitable



for each legitimate application. It discusses the basic principles of steam sterilization and the control methods by which the correct operation of sterilizers may be assured.

The second report is that of the Service's own Committee (1965) on the Evaluation of Liquid Disinfectants for Hospital Use mentioned in the P.H.L.S. Year Book for 1964. The Committee found that although in most hospitals there was no clear policy for disinfectants some had already succeeded in restricting the number to a few, well chosen for efficiency, suitability and economy and had thereby reduced not only confusion but cost. In general the Committee concluded that there were few genuine indications for the use by hospitals of liquid chemical disinfectants and that whenever possible some form of treatment by heat should be used. Where liquid disinfectants were necessary they recommended phenolic disinfectants containing coal-tar acids. Such are black and white fluids or clear soluble fluids of the lysol type. For the rapid disinfection of clean surfaces hypochlorites with or without detergents were preferred. Chloroxylenol, chlorhexidine, quaternary ammonium compounds and pine fluids were not recommended as general disinfectants in hospitals.

These are useful reports which will help to clear up confusion and to make easier the formulation of a rational policy for sterilization and disinfection.

Medical Research Council: Working Party on Pressure-Steam Sterilizers, 1964 *Lancet*, ii, 193.

Public Health Laboratory Service: Committee on the Evaluation of Liquid Disinfectants for Hospital Use, *Brit. med. J.*, 1965, i, 408







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### DIAGNOSTIC REFERENCE LABORATORY and SUB- LABORATORIES:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

C. E. D. Taylor, M.A., M.D., M.C.Path.,  
Dip. Bact. (*Director*)

D. A. McSwiggan, L.R.C.P.I., D.T.M.  
& H.

Mrs. R. C. J. James (Mrs. Barkham),  
M.B., Dip. Bact. (*part-time: at Public  
Health Laboratory, Neasden Hospital,  
Brentfield Road, N.W.10.*)

*Tel.*: Willesden 1422)

K. A. Machacek, M.D., D.P.H.  
(*at Public Health Laboratory, Coppett's  
Wood Hospital, Coppett's Wood Road,  
N.10.*)

*Tel.*: Tudor 1990)

Miss M. E. M. Thomas (Mrs. Living-  
stone), M.B., B.Sc., F.C.Path., D.P.H.  
(*part-time: at Public Health Laboratory,  
Town Hall, Edmonton, N.9.*)

*Tel.*: Edmonton 7625)

### ENTERIC REFERENCE LABORATORY:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

E. S. Anderson, M.D., F.C.Path.,  
Dip. Bact. (*Director*)

Miss L. Glover, Dip. Tech.

M. J. Lewis, M.B., Dip. Bact.

### LEPTOSPIROSIS REFERENCE LABORATORY:

London School of Hygiene and  
Tropical Medicine, Keppel Street,  
London, W.C.1.

*Tel.*: Museum 3041

L. H. Turner, M.B.E., M.D.,  
D.T.M. & H. (*Director*)

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\*Members of the external scientific staff of the Medical Research Council.



## MYCOLOGICAL REFERENCE LABORATORY:

London School of Hygiene and  
Tropical Medicine, Keppel Street,  
London, W.C.1.

*Tel.*: Museum 3041

I. G. Murray, M.B., M.C.Path.,  
D.T.M. & H. (*Director*)  
Miss C. Philpot, B.Sc.

## SALMONELLA REFERENCE LABORATORY:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

Mrs. J. Taylor, M.B., B.Sc., F.C.Path.,  
D.P.H. (*Director*)  
K. A. Bettelheim, M.Sc., D.I.C.  
Miss M. M. Lee (Mrs. Brooks), B.Sc.

## TUBERCULOSIS REFERENCE LABORATORY:

Institute of Preventive Medicine,  
The Parade, Cardiff.

*Tel.*: Cardiff 30108

J. Marks, M.D., F.C.Path., Dip. Bact.  
(*Director*)  
P. A. Jenkins, Ph.D.

## VENEREAL DISEASES

### REFERENCE LABORATORY:

London Hospital Research Labora-  
tories, Ashfield Street, London, E.1.

*Tel.*: Stepney Green 3008

A. E. Wilkinson, M.R.C.S., M.C.Path.  
(*Director, part-time*)  
Miss N. A. Johnston, M.D., D.R.C.O.G.  
(*part-time*)  
Miss C. F. A. Rayner, B.Sc.

## VIRUS REFERENCE LABORATORY:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

A. D. Macrae, M.D., M.C.Path., Dip.  
Bact. (*Director*)  
Miss M. O. Adams (Mrs. Roebuck),  
M.B., Dip. Bact.  
B. E. Andrews, M.R.C.S., M.C.Path.,  
Dip. Bact.  
B. W. Barton, M.B., M.C.Path., Dip.  
Bact.  
Miss Y. E. Cossart (Mrs. Wills), M.B.,  
B.Sc., M.C.Path., D.C.P.  
J. Craske, M.B.  
Miss A. M. Field, B.Sc.  
Miss S. D. Gardner, M.B., Dip. Bact.  
J. R. McDonald, F.I.M.L.T. (*Technical  
Officer*)  
Mrs. M. S. Pereira, M.D.  
Miss E. V. Williams, B.Sc.  
G. D. Windsor, B.Sc.

## SPECIAL LABORATORIES

### EPIDEMIOLOGICAL RESEARCH LABORATORY:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

T. M. Pollock, M.B. (*Director*)  
D. L. Miller, M.D.  
Mrs. C. S. Peckham, M.B.  
Mrs. E. D. Vernon, B.Sc.  
Mrs. E. White, M.B., D.P.H.

### NATIONAL COLLECTION OF TYPE CULTURES:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

S. P. Lapage, M.B., M.C.Path.,  
Dip. Bact. (*Curator*)  
Miss J. Midgeley, B.Sc.

### EPIDEMIOLOGICAL RESEARCH UNIT:

86, Dyer Street, Cirencester, Glos.

*Tel.*: Cirencester 745

R. E. Hope-Simpson, O.B.E., M.R.C.S.  
(*Director, part-time*)  
P. G. Higgins, M.D., Dip. Bact.

### STANDARDS LABORATORY FOR SEROLOGICAL REAGENTS:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

Mrs. C. M. P. Bradstreet, M.B.,  
M.C.Path., Dip. Bact. (*Director*)  
Miss E. M. Bailey, B.Sc.  
Mrs. M. W. Dighero, B.Sc.  
Mrs. J. M. B. Edwards, M.B., M.C.Path.  
(*part-time*)  
Miss G. J. Perry, B.Sc.  
J. V. S. Pether, M.A., B.M.,  
D.T.M. & H.  
Miss A. J. Tannahill, B.Sc.

### FOOD HYGIENE LABORATORY:

Central Public Health Laboratory,  
Colindale Avenue, London, N.W.9.

*Tel.*: Colindale 7041

Miss B. C. Hobbs, O.St.J., D.Sc.,  
Dip. Bact. (*Director*)  
A. C. Ghosh, B.Sc.



## JUNIOR BACTERIOLOGISTS IN TRAINING

*(Attending course at The London School of Hygiene and Tropical Medicine for Diploma in Bacteriology, 1964-65.)*

J. A. N. Emslie, M.B.  
H. R. Ingham, M.B.  
C. D. Plows, M.B.

B. T. Thom, M.B.  
A. J. Zuckerman, M.Sc., M.D.,  
D. Obst.R.C.O.G.

## STAFF ON SECONDMENT

J. F. Archer, M.B., Dip. Bact. (*to University of Sheffield*)  
D. C. J. Bassett, M.B., Dip. Bact. (*to Trinidad Regional Virus Laboratory*)  
P. Cavanagh, M.B., B.A.O. (*to University of Khartoum, Sudan*)  
P. G. Mann, M.D., M.C.Path., Dip. Bact. (*to Ministry of Public Health, Ethiopia*)  
P. J. Sanderson, M.B., B.Sc., Dip. Bact. (*to St. Mary's Hospital, London, W.2.*)  
G. Scrimgeour, M.B. (*to St. George's Hospital, London, S.W.1.*)  
J. A. Tooth, M.B., Dip. Bact. (*to London School of Hygiene and Tropical Medicine*)



## REFERENCE EXPERTS

In the following list the name of the expert who is responsible for the relevant examination is given. It should be added, however, that all regional and most area laboratories are undertaking the routine diagnosis of virus infections, and that several laboratories are undertaking the serological identification of members of the *Salmonella* group, the serological diagnosis of leptospiral infections, and the bacteriophage-typing of strains of *Staphylococcus aureus*. For this reason, enquiries on these subjects should usually be addressed to the local public health laboratory.

### *Anaerobes*, identification

Professor C. L. Oakley, M.D., D.Sc., F.C. Path., F.R.S., Bacteriology Department, School of Medicine, Leeds, 2. Tel.: Leeds 36171.

### *Anthrax bacilli*, identification

A. J. H. Tomlinson, M.D., Bacteriological Laboratory (P.H.L.S.), Room 617, County Hall, London, S.E.1. Tel.: Waterloo 3467.

### *Anthrax*, examination under Wool and Hair Regulations

T. F. Elias-Jones, M.B., M.C.Path., The City Laboratory, 23, Montrose Street, Glasgow, C.1. Tel.: Glasgow Central 9600.

H. G. M. Smith, M.B., Ph.D., Dip. Bact., Public Health Laboratory, 16-18, Edmund Street, Bradford, 5. Tel.: Bradford 24314.

A. J. H. Tomlinson, M.D., Bacteriological Laboratory (P.H.L.S.), Room 617, County Hall, London, S.E.1. Tel.: Waterloo 3467.

### *Arizona group*, identification

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H., Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale 7041.

### *Brucella*, identification

D. J. H. Payne, M.B., F.C.Path., Dip. Bact., Public Health Laboratory, Priorsdean Hospital, Milton Road, Portsmouth. Tel.: Portsmouth 22331.

### *Clostridium welchii*, serological typing

Miss B. C. Hobbs, D.Sc., Dip. Bact., Food Hygiene Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale 7041.

### *Coxsackie A viruses*

D. R. Gamble, M.B., M.C.Path., Dip. Bact., Public Health Laboratory, West Park Hospital, Epsom. Tel.: Epsom 26633.

### *Disinfection*

J. C. Kelsey, M.D., M.C.Path., Dip. Bact., Disinfection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Dysentery, amoebic, complement-fixation test for*

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip. Bact., Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Dysentery bacilli, typing*

Mrs. K. P. Carpenter, M.B., M.C.Path., Dip. Bact., Dysentery Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Encephalitis, acute infectious*

A. D. Macrae, M.D., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Enteric Fever*

(a) Serological investigation of suspected cases and carriers.

(b) Phage-type determination of strains of typhoid and paratyphoid bacilli, and of *Salmonella typhi-murium* and other salmonella serotypes.

E. S. Anderson, M.D., F.C.Path., Dip. Bact., Enteric Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Enteritis, infantile, typing of strains of Esch. coli*

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H., Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Entomological specimens, investigation*

B. R. Laurence, Ph.D., Department of Entomology, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

### *Farmer's lung, serological diagnosis*

I. G. Murray, M.B., M.C.Path., D.T.M. & H., Mycological Reference Laboratory, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

D. G. Davies, M.D., F.C.Path., Dip. Bact., Public Health Laboratory, Cumberland Infirmary, Carlisle. *Tel.*: Carlisle 22332.

J. M. S. Dixon, M.D., M.C.Path., Dip. Bact., Public Health Laboratory, Woodbridge Road East, Ipswich. *Tel.*: Ipswich 77261/2.

J. E. Jameson, M.R.C.S., Public Health Laboratory, Royal Sussex County Hospital, Brighton, 7. *Tel.*: Brighton 63506.



*Farmer's lung, serological diagnosis—contd.*

B. Moore, M.B., B.Sc., M.C.Path., B.A.O., Public Health Laboratory, Bradninch Place, Gandy Street, Exeter. *Tel.*: Exeter 54959.

H. D. S. Morgan, M.R.C.S., M.C.Path., Dip. Bact., Public Health Laboratory, West Wales General Hospital, Glangwili, Carmarthen. *Tel.*: Carmarthen 7271.

Professor Scott Thomson, M.D., F.R.C.P.E., F.C.Path., D.P.H., Public Health Laboratory, Institute of Pathology, Royal Infirmary, Cardiff. *Tel.*: Cardiff 31918.

D. M. Weir, M.D., Department of Bacteriology, Edinburgh University Medical School, Teviot Place, Edinburgh. *Tel.*: Edinburgh Newington 2542.

*Food Poisoning\**

Miss B. C. Hobbs, D.Sc., Dip. Bact., Food Hygiene Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

*Fungi (pathogenic), identification*

I. G. Murray, M.B., M.C.Path., D.T.M. & H., Mycological Reference Laboratory, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

*Helminthological specimens, investigation*

Professor J. J. C. Buckley, D.Sc., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

*Hydatid disease, complement-fixation test for*

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip. Bact., Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

*Influenza*

L. Hoyle, M.B., Public Health Laboratory, General Hospital, Northampton. *Tel.*: Northampton 34347.

*Leptospiral infections*

L. H. Turner, M.B.E., M.D., D.T.M. & H., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

*Lymphocytic meningitis*

*Lymphogranuloma venereum*

A. D. Macrae, M.D., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

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\* Owing to the perishable nature of most foodstuffs, material for investigation from outbreaks of food poisoning should normally be sent to the nearest public health laboratory. The reference laboratory should be used mainly for non-perishable articles of food, especially when litigation may arise, and for the identification of strains.

### *Malaria*

Professor P. C. C. Garnham, M.D., D.Sc., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

### *Meningococci, typing*

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip. Bact., Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Mycoplasma*

B. E. Andrews, M.R.C.S., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Parasitic infections, serological diagnosis of*

D. S. Ridley, B.Sc., M.D., M.C.Path., Department of Pathology, Hospital for Tropical Diseases, 4, St. Pancras Way, London, N.W.1. *Tel.*: Euston 6441.

### *Pasteurella pseudotuberculosis*

N. S. Mair, M.B., F.C.Path., D.C.H., D.P.H., Dip. Bact., Public Health Laboratory, Groby Road Hospital, Leicester. *Tel.*: Leicester 872283.

### *Plague, investigation*

R. J. Henderson, M.D., Public Health Laboratory, Royal Infirmary, Worcester. *Tel.*: Worcester 25238/9.

### *Pneumococci, typing of from epidemics*

M. T. Parker, M.D., F.C.Path., Dip. Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Poliomyelitis*

A. D. Macrae, M.D., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Protozoological specimens, investigation*

Professor P. C. C. Garnham, M.D., D.Sc., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

### *Psittacosis, diagnosis*

A. D. Macrae, M.D., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Rabies, laboratory tests for diagnosis*

Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.



### *Salmonella organisms, typing*

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H., Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Smallpox, laboratory tests for diagnosis*

Professor A. W. Downie, M.D., D.Sc., F.C.Path., F.R.S., Bacteriology Department, Medical School, Ashton Street, Liverpool, 3. *Tel.*: Royal 7983 and Royal 6022, Ext. 202.

J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P., Public Health Laboratory, Institute of Pathology, General Hospital, Westgate Road, Newcastle upon Tyne, 4. *Tel.*: Newcastle 38811, Ext. 297.

A. D. Macrae, M.D., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

Professor Scott Thomson, M.D., F.R.C.P.E., F.C.Path., D.P.H., Public Health Laboratory, Institute of Pathology, 3rd Floor, Royal Infirmary, Cardiff. *Tel.*: Cardiff 24385.

### *Staphylococci, bacteriophage-typing*

M. T. Parker, M.D., F.C.Path., Dip. Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Streptococci of Group A, typing*

M. T. Parker, M.D., F.C.Path., Dip. Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Regional Typing Laboratories*

(i) *Northern and South Eastern counties*: Cumberland, Co. Durham, Lancs., Northumberland, Westmorland, Yorks.; Dorset, Hants., Kent, London, Middx., Surrey, Sussex.

M. T. Parker, M.D., F.C.Path., Dip. Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

(ii) *Eastern counties*: Beds., Cambs., Derby, Essex, Herts., Hunts., Leics., Lincs., Norfolk, Northants., Notts., Rutland, Suffolk.

Miss J. M. Boissard, M.R.C.S., Public Health Laboratory, Tennis Court Road, Cambridge. *Tel.*: Cambridge 55526.

(iii) *Western counties*: Berks, Bucks., Cheshire, Cornwall, Devon, Glos., Heref., Oxon., Salop., Somerset, Staffs, Warw., Wilts., Worcs.

R. L. Vollum, D.Phil., Public Health Laboratory, Radcliffe Infirmary, Oxford. *Tel.*: Oxford 49231/2.

(iv) *Wales*.

Professor Scott Thomson, M.D., F.R.C.P.E., F.C.Path., D.P.H., Public Health Laboratory, Institute of Pathology, 3rd Floor, Royal Infirmary, Cardiff. *Tel.*: Cardiff 24385.

### *Toxoplasmosis*

#### *North*

G. B. Ludlam, M.D., F.C.Path., D.T.M. & H., D.L.O., Public Health Laboratory, Bridle Path, York Road, Leeds, 15. *Tel.*: Leeds 645011.

#### *South*

D. G. Fleck, M.D., M.C.Path., Dip. Bact., Public Health Laboratory, Cockett Road, Swansea. *Tel.*: Swansea 24041/2.

### *Trichinosis*, examination of rats and pigs

Professor J. J. C. Buckley, D.Sc., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum 3041.

### *Tubercle bacilli*, typing

J. Marks, M.D., F.C.Path., M.R.C.P., Dip. Bact., Tuberculosis Reference Laboratory, Institute of Preventive Medicine, The Parade, Cardiff. *Tel.*: Cardiff 30108.

### *Typhus Fever*, serological tests\*

Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

### *Venereal diseases*

A. E. Wilkinson, M.R.C.S., Venereal Diseases Reference Laboratory, London Hospital Research Laboratories, Ashfield Street, London, E.1. *Tel.*: Stepney Green 3008.

### *Venereal diseases, Treponemal immobilisation test*

A. E. Wilkinson, M.R.C.S., M.C.Path., Venereal Diseases Reference Laboratory, London Hospital Research Laboratories, Ashfield Street, London, E.1. *Tel.*: Stepney Green 3008.

#### *Midlands*

P. J. L. Sequeira, M.B., The Central Serological Laboratory, Withington Hospital, West Didsbury, Manchester, 20. *Tel.*: Didsbury 8111.

#### *North*

J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P., Public Health Laboratory, Institute of Pathology, General Hospital, Westgate Road, Newcastle upon Tyne, 4. *Tel.*: Newcastle 38811, Ext. 297.

### *Viruses*, material from infections other than those mentioned

A. D. Macrae, M.D., M.C.Path., Dip. Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale 7041.

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\* The Weil-Felix test can be carried out in all constituent laboratories of the Service, and also in a number of hospital laboratories. Only sera giving a doubtful reaction should be sent to the Virus Reference Laboratory.



# VACCINES AND SERA OBTAINABLE THROUGH THE PUBLIC HEALTH LABORATORY SERVICE

(These reagents are issued free of charge to medical officers of health and to general practitioners taking part in Local Health Authorities' arrangements made under Section 26 of the National Health Service Act)

Laboratory (For address see pp. 17-23)	Smallpox *Vaccine	Typhus Vaccine	Rabies Vaccine	Anthrax Vaccine
Birmingham .. ..	+	+	—	—
Bradford .. ..	—	—	—	+
Bristol .. ..	+	+	—	—
Cambridge .. ..	+	+	—	—
Carlisle .. ..	+	—	—	—
Derby .. ..	+	—	—	—
Dorchester .. ..	+	—	—	—
Exeter .. ..	+	+	—	—
Hereford .. ..	+	—	—	—
Ipswich .. ..	+	—	—	—
Leeds .. ..	+	+	—	—
Leicester .. ..	+	—	—	—
Lincoln .. ..	+	—	—	—
Liverpool .. ..	+	+	+	+
London (Colindale) ..	+	+	+	+
Maidstone .. ..	+	—	—	—
Manchester .. ..	+	+	—	—
Newcastle .. ..	+	+	+	—
Northallerton .. ..	+	—	—	—
Northampton .. ..	+	—	—	—
Norwich .. ..	+	—	—	—
Oxford .. ..	+	+	—	—
Preston .. ..	+	—	—	—
Sheffield .. ..	+	+	—	—
Stafford .. ..	+	—	—	—
Wakefield .. ..	+	—	—	—
Winchester .. ..	+	—	—	—
Cardiff (a) .. ..	+	+	+	—
Carmarthen .. ..	+	—	—	—
Conway .. ..	+	—	—	—

+ means that a stock is normally held.

— means that a stock is not normally held.

NOTE 1.—Antisera for *therapeutic* use are obtainable through the Hospital Pathological Service.

„ 2.—*Gamma globulin* prepared from the pooled plasma of normal healthy adults is obtainable on request from any laboratory of the Service. So far as supplies allow, it is issued for the protection of susceptible contacts of measles, rubella, infectious hepatitis and poliomyelitis.

In addition to normal gamma globulin, a stock of gamma globulin prepared from the blood of persons recently vaccinated against smallpox is held for the treatment of cases of generalised vaccinia, eczema vaccinatum, accidental vaccinal infections endangering the eye, and, in special circumstances, for the protection of unvaccinated smallpox contacts. This anti-vaccinal gamma globulin may be obtained from any of the regional laboratories (pp. 17-18) and from Birmingham (p. 18) as well as from Colindale.

„ 3.—*Yellow fever*: A list of centres where inoculation against this disease can be carried out is obtainable from the Ministry of Health, Alexander Fleming House, Elephant & Castle, London, S.E.1.

„ 4.—*T.A.B.C., cholera, and most other vaccines* are available commercially.

„ 5.—*Material for intradermal diagnostic tests*: Frei antigen for Lymphogranuloma inguinale, Brucellin for Undulant fever, Trichina antigen for Trichinosis, Hydatid antigen for Hydatid disease, and cat-scratch fever antigen can be obtained from

\* In addition to the laboratories named officially below, many laboratories carry small supplies for the convenience of local medical practitioners.

NOTE 5.—*contd.*

Dr. C. M. Patricia Bradstreet, Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London N.W.9 (*Tel.* Colindale 7041). Kveim antigen for Sarcoidosis may also be obtained, through any pathologist, from the Standards Laboratory. Histoplasmin and coccidioidin antigen for diagnostic skin tests may be obtained from the Department of Pathology, St. John's Hospital for Diseases of the Skin, Lisle Street, London, W.C.2 (*Tel.* Gerrard 8383, Ext. 22). Blastomycosis antigen is obtainable commercially from Messrs. Parke Davis & Co., Staines Road, Hounslow, Middlesex (*Tel.* Hounslow 2361).

- ., 6.—Certain *reagents for the diagnosis of venereal disease* can be obtained from Dr. A. E. Wilkinson at the Venereal Diseases Reference Laboratory, London Hospital Research Laboratories, Ashfield Street, London, E.1 (*Tel.* Stepney Green 3008).



# APPENDIX I

## COMMITTEES AND WORKING PARTIES

### *Food Investigation*

*Chairman and Secretary:* J. H. McCoy, M.B., D.P.H.

E. S. Anderson, M.D., F.C.Path., Dip. Bact.  
R. W. S. Harvey, M.B., M.C.Path., Dip. Bact.  
Miss B. C. Hobbs, D.Sc., Dip. Bact.  
W. Kwantes, M.B., F.C.Path., Dip. Bact.  
H. D. S. Morgan, M.R.C.S., M.C.Path.,  
Dip. Bact.  
H. G. M. Smith, M.B., Ph.D., Dip. Bact.

Mrs. J. Taylor, M.B., B.Sc., F.C.Path.,  
D.P.H.  
A. J. H. Tomlinson, M.D.  
M. Ingram, M.A., Ph.D. (*Low Temperature  
Research Station*)  
S. Brightwell, M.Sc., D.I.C., A.R.I.C.  
(*Messrs. J. Sainsbury, Ltd., to give technical  
advice on trade matters*)

### *Cross-Infection in Hospitals*

#### *(a) Autopsy Survey of Staphylococcal Infection (Steering Committee)*

*Chairman:* M. T. Parker, M.D., F.C.Path., Dip. Bact.

*Secretary:* B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

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R. J. Henderson, M.D.  
K. E. A. Hughes, M.B.E., M.R.C.S.

Professor R. E. O. Williams, M.D., F.C.Path.,  
M.R.C.P. (*St. Mary's Hospital Medical  
School*)

#### *(b) Survey of Hospital-Acquired Infection in Medical Wards (Steering Committee)*

*Chairman:* M. T. Parker, M.D., F.C.Path., Dip. Bact.

*Secretary:* R. Blowers, M.D., F.C.Path., M.R.C.P., Dip. Bact.

J. A. Boycott, D.M.  
R. J. Henderson, M.D.

H. D. S. Morgan, M.R.C.S., M.C.Path.,  
Dip. Bact.

In addition to the members of the Steering Committees, a number of laboratories are taking part in one or other or both surveys.

### *Bacteriological Examination of Watercress*

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Miss B. C. Hobbs, D.Sc., Dip. Bact.  
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K. E. A. Hughes, M.B.E., M.R.C.S.  
W. H. H. Jebb, M.D., M.C.Path., Barrister-  
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J. F. E. Bloss, M.R.C.S., D.P.H. (*Ministry  
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Agriculture, Fisheries and Food*)  
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*Working Parties on Acute Respiratory Virus Infections*

(working in collaboration with the Medical Research Council Working Party)

*Group I: Acute Respiratory Virus Infections in General Practice*

*Chairman:* P. G. Higgins, M.D., Dip. Bact.

*Secretary:* R. E. Hope-Simpson, O.B.E., M.R.C.S.

*Group II: Acute Respiratory Virus Infections in Industrial Workers*

*Chairman and Secretary:* T. D. F. Money, M.B., D.R.C.O.G.

*Group III: Acute Respiratory Virus Infections among Children in Hospital*

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*Group IV: Chronic Bronchitis*

*Chairman and Secretary:* A. D. Evans, M.B., B.Sc., M.C.Path., Dip. Bact

*Working Party on Protective Cabinets*

*Chairman and Secretary:* J. A. Boycott, D.M.



## APPENIDX II

### PUBLICATIONS BY MEMBERS OF THE STAFF OF THE PUBLIC HEALTH LABORATORY SERVICE DURING 1964

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## APPENDIX III

### AWARDS AND EXTERNAL OFFICES ACCEPTED BY MEMBERS OF THE SERVICE DURING 1964

Mr. J. D. Atkinson ..	..	M.B.E. in the New Years Honours List.
Dr. J. C. Kelsey ..	..	Member of the Association of Clinical Pathologists.
Dr. Joan Taylor ..	..	Fellow of University College, London; President of the Society of applied Bacteriology; President of the Comparative Medicine Section of the Royal Society of Medicine; Member of the Council of the Royal Society of Medicine; Member of the Consulting Pathologists Group Committee of the British Medical Association; Representative of the Central Consultants and Specialists Committee of the British Medical Association.



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